

Application No.: 09/997082

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**REMARKS**

Claims 1-19 are pending. Claims 1-9 have been withdrawn from consideration.

**§ 103 Rejections**

Claims 10-19 stand rejected under 35 USC § 103(a) as purportedly unpatentable over U.S. Pat. No. 6,803,143 (Zuber) in view of U.S. Pat. No. 3,573,991 (Lenfant) or U.S. Pat. No. 4,897,286 (Kosuda). Claims 10-16 and 19 stand rejected under 35 USC § 103(a) as purportedly unpatentable over U.S. Pat. No. 3,972,735 (Breault) in view of Lenfant or Kosuda. Claims 17 and 18 stand rejected under 35 USC § 103(a) as purportedly unpatentable over Breault in view of Lenfant or Kosuda, and further in view of Zuber. Applicants respectfully traverse.

It is axiomatic that, in order to establish a prima facie case of obviousness of a claim, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)("All words in a claim must be considered in judging the patentability of that claim against the prior art.")(cited at MPEP § 2143.03). In the present case, no prima facie case of obviousness has been established because none of the cited references teaches or suggests claim limitations recited in the present claims.

In general, claims 10-13 recite a hydrophobic carbon fiber construction made by specified processes of electrophoretic deposition. The Office Action points to no teaching in any of the cited references of a process which includes a step of electrophoretically depositing a highly fluorinated polymer on a carbon fiber construction, as recited in those claims. In general, each of claims 12-19 relate to a hydrophobic carbon fiber construction coated with a monolayer of particles of a highly fluorinated polymer. The Office Action points to no teaching in any of the cited references of such a construction having such a monolayer coating.

In general, claims 10-13 recite a hydrophobic carbon fiber construction made by specified processes of electrophoretic deposition. Claim 10 recites a hydrophobic carbon fiber construction made according to a method comprising the steps of:

- "a) immersing a carbon fiber construction in an aqueous dispersion of a highly fluorinated polymer;
- b) contacting said dispersion with a counterelectrode; and

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c) electrophoretically depositing said highly fluorinated polymer on said carbon fiber construction by applying electric current between said carbon fiber construction and said counterelectrode."

The Office Action asserts that each of the primary references teach "a method of making a hydrophobic carbon fiber construction comprising the step of immersing a carbon fiber construction in an aqueous dispersion of highly fluorinated polymer" (Office Action at page 3, re Zuber, and at page 4, re Breault). The Office Action concedes that both Zuber and Breault "fail[] to mention electrophoretically depositing the highly fluorinated polymer on the carbon fiber construction." (Office Action at page 3, re Zuber, and at page 4, re Breault). This is a major omission, in regard to both the process and the product resulting from that process.

Examples 1 and 2C in the present Specification represent a side-by-side comparison of processes performed with (Ex. 1) and without (Ex. 2C) the electrophoretic deposition step. Figs. 1 and 2 are electron micrographs of the actual product of Example 1. Figs. 3 and 4 are electron micrographs of the actual product of Example 2C. As noted in the Specification (e.g. at p. 5, ln. 25 et seq.), the fluoropolymer coatings produced according to the method of the present invention are uniquely uniform. In Figs. 1 and 2 it can be seen that the particles of fluoropolymer form a monolayer on the surface of the fibers. In contrast, Figs. 3 and 4 reveal clumped fluoropolymer particles and large uncoated areas on many fibers of the Ex. 2C product.

The Office Action cites Lenfant and Kosuda for a purported teaching of step c) of claim 10. However, Lenfant concerns a process of electrostatic projection, wherein a dry powder, supported in a current of gas, is deposited on a support. (Lenfant at col. 3, lns. 65-75). This reference has no relevance to and cannot be connected with a process that requires "immersing a carbon fiber construction in an aqueous dispersion of a highly fluorinated polymer."

Kosuda concerns a method of making "a carbon fiber reinforced thermoplastic resin product (preg)." (Kosuda at col. 1, lns. 10-21). The composite of Kosuda is said to have improved impact resistance and to be useful in aerospace and other industrial fields. (Id.). Kosuda does not teach or suggest the use of a fluoropolymer, as required in the present claims. Kosuda does not teach or suggest the treatment of a carbon fiber construction, as required in the present claims. It follows that Kosuda has no relevance to a method of making a hydrophobic

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carbon fiber construction by depositing a highly fluorinated polymer on a carbon fiber construction.

In general, each of claims 12-19 relate to a hydrophobic carbon fiber construction coated with a monolayer of particles of a highly fluorinated polymer. The Office Action points to no teaching in any of the cited references of such a construction having such a monolayer coating. However, the Office Action speculates that "it appears that the hydrophobic carbon fiber construction taught by the prior art inherently possesses a monolayer." (Office Action at 3, 5). As noted above, none of the cited references teaches the process of the present invention, nor does any combination of the cited references, and therefore the Office Action is speculating as to an inherent property of a process not taught in the prior art.

Furthermore, the Office Action cites no support in any of the cited references for the speculation that the prior art inherently possesses a monolayer. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (cited at MPEP § 2112). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)(cited at MPEP § 2112). As noted above, Examples 1 and 2C in the present Specification demonstrate that the fluoropolymer coatings produced according to the method of the present invention are in fact uniquely uniform. The Office Action cites no part of the cited references to support the speculation of inherency. And, undercutting any speculation that the allegedly inherent characteristic necessarily flows from the teachings of the prior art, the Office Action gives equal weight to the speculation that the monolayer cannot be found in the prior art. ("In the event that it is shown that a monolayer does not exist . . ." (Office Action at 3, 5)).

Alternately, the Office Action states, "In the event that it is shown that a monolayer does not exist, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to vary the voltage and/or current applied to vary the amount of polymer deposited, such that a monolayer of particles of highly fluorinated polymer was deposited based on the desired amount of polymer and because discovering an optimum value of a result effective

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variable involves only routine skill in the art." (Office Action at 3, 5). The Office Action points to no motivation in any of the references to create a monolayer. The Office Action points to no teaching in any of the references that "voltage and/or current applied" is a result effective variable in achieving a monolayer. (The cited passage in Kosuda does not teach that "voltage and/or current applied" is a result effective variable in achieving a monolayer, nor is Kosuda a relevant reference, as noted above.)

The rejection of claims 10-19 under 35 USC § 103(a) as purportedly unpatentable has been overcome and should be withdrawn.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Respectfully submitted,

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